MEDDOCS Open Access Publisher

ISSN: 2639-9210

Annals of Dentistry and Oral Health

Open Access | Review Article

Cognitive - Behavioral Strategies for Controlling Temporomandibular Disorders and Bruxism: A Brief Review

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Received: Jun 08, 2021

Accepted: Jul 08, 2021

Published Online: Jul 12, 2021

Journal: Annals of Dentistry and Oral Health

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Temporomandibular joint disorders; TMJ disorders; Bruxism; Behavior Control; Cognitive behavioral therapy.

Abstract

In dentistry, cognitive-behavioral strategies are fairly quoted in the literature dedicated to treating Temporomandibular Disorders (TMD) and bruxism, a prevalent facial musculoskeletal chronic condition and facial movement behavior, respectively. Both conditions have various still-debated etiological and contributing factors. Despite being widely accepted and fairly mentioned during lectures or dental professionals' routine, cognitive-behavioral techniques for chronic facial pain or chronic facial movement dysfunction and parafunction are rarely scrutinized, resulting in their poor understanding. This brief review intends to reveal the essence of the cognitive-behavioral approach of TMD and bruxism, its history, and main technical topics that are relevant for clinicians or therapists who are involved with these conditions.

Introduction

Temporomandibular Disorders (TMD) are a heterogeneous group of conditions that affect the temporomandibular joints, jaw muscles, and related structures. Historically, its treatment and etiological issues have shifted from a mechanical approach to a broader biopsychosocial consideration and management [1,2].

Currently, bruxism is defined as a repetitive jaw muscle activity characterized by clenching or grinding the teeth and/or bracing or thrusting the mandible. Bruxism is mainly considered as a regulated central activity and should not be defined as a disorder but a behavior, sometimes harmless or even protective [3].

Cite this article: Barreto Aranha RL, Franzen DA. Cognitive - Behavioral Strategies for Controlling Temporomandibular Disorders and Bruxism: A Brief Review. Ann Dent Oral Health. 2021; 4(1): 1038.

Interestingly, in addition to classical teeth grinding or clenching, the new concept of bruxism encompasses other nonfunctional oral activities (bracing or thrusting the mandible). Two distinct categories of bruxism have been established in the literature: Sleep bruxism and awake bruxism. Despite some debate, bruxism, especially of the awake category, remains one of the most cited painful risk factors of TMD [4,5].

Dworkin [6] claims that dentists act as biobehavioral clinicians when dealing with anxious patients seeking treatment for various conditions, such as caries. The way of addressing anxiety using drugs or behavioral modification allows comfort and treatment engagement of the patient. Otherwise, the patient withdraws from the dental service. "Thinking is a somatic process: When the mind changes, the brain changes. Emotion and feeling states are somatic states as well." Whether for chronic pain [7] or somatic disorders, the observable behavior may contribute to (e.g., bruxism in TMD patients) or be an attempt to cope with symptoms, evoking verbal or nonverbal expressions, which may translate, in the social context, as being reinforced or restrained thereafter.

Discussion

With the hope of reaching the central component involved in the etiology of TMD or bruxism, resources and techniques from psychology are emphasized. Behavioral and cognitive approaches are most directly connected to treating patients with pain or organic dysfunction among the various psychology branches.

Behaviorism was introduced by John B. Watson in 1913, and it received great contribution and dissemination by B.F. Skinner studies (1904–1990). Behaviorism is based on the fact that different human actions (behaviors) are learned, detectable, reinforced, or extinguished under certain conditions. "Behavioral technology" was then developed to modify these actions, largely based on animal experiments [8,9].

The cognitive branch (cognition=knowledge/learning) assumes that thinking influences feelings. The mind intervenes between an event and its response. Thus, in theory, it is possible to instruct the patient to have more positive thoughts and not focus on negative interpretations of reality, as occurs in depression, for instance. Two of the exponent authors of this technique are George Kelly (1905–1967) and Aaron Beck [8,10].

Brief cognitive-behavioral interventions for painful disorders, including TMD, have been employed since the 1960s. According to Hathaway (1997) [11] and Dworkin (2000) [12], these strategies must be available to the clinician who wants to treat TMD or control bruxism, including methods for coping with pain or dysfunction and reducing oral habits. Besides, managing inappropriate health behaviors (such as sedentary lifestyle, malnutrition, and inadequate sleep habits), and stress control (such as hypnosis and relaxation).

Despite the intermediate or low level of evidence and no positive results beyond the control group scores found in recent articles, [13,14,15] numerous authors have emphasized the importance of including cognitive-behavioral resources to the dentist's therapeutic repertoire, [16,17,18] enabling better management of patients with TMD or those experiencing bruxism - also considered a behavior. Given the commonly reported favorable clinical experience, potential for improving health habits in general, associated low risks, and negligible financial costs, the incorporation of cognitive-behavioral strategies as relevant treatment or habit control options seems valid. Moreover, some papers report sleep bruxism improvement after diurnal behavioral training such as biofeedback [19]. Meanwhile, a more consistent body of evidence on the topic is built.

In the pain and TMD clinic, oral and lifestyle habits, including the presence of bruxism or other parafunction, bad craniocervical posture at work, at home, or when sleeping; poor hygiene or sleep, inadequate diet, alcohol use, and painkiller abuse, should be documented in the initial examination. Moreover, the patient must be carefully informed about the importance of avoiding or reversing inappropriate behaviors and their relationship with the chronic pain process. The language must be clear and suitable to the patient's sociocultural condition (a cognitive component of the treatment).

Concerning the parafunction approach in the craniocervical area, it is necessary to inform about the mandibular resting position or postural balance position of the mandible, which must be observed in most daily routines. In general, such position is described as the absence of interdental contact (1–3 mm of the functional free space between the antagonistic first premolars) and minimal activity of the masticatory muscles, sufficient only to counteract gravitational forces. There should be no additional contractions. The mouth must remain closed, with soft lip contact. The tip of the tongue should touch the incisive papilla and its back toward the palate. The patient must be informed that subtle dental contact is permissible only during chewing or swallowing. Finally, it must be clear that excessive dental touch may translate into parafunction that eventually aggravates pain or dysfunction of the facial region [11,20,21].

After that, training and behavior reversal techniques are employed. The first records of cognitive-behavioral strategies with successive interventions to control oral habits point back to Azrin and Nunn (1973) [22], which Hathaway [11] improved, as described below:

1- Increase the patient's awareness of the behavior to be reversed, such as clenching. It is achieved by providing the correct information about the habit, mandibular resting position (mentioned above), and self-monitoring, which consists of placing the tip of the tongue on the palate, keeping teeth apart, and relaxing the muscles every 20 or 30 min. These methods interrupt the habit by doing movements incompatible with teeth clenching, i.e., relaxation and separation of the arches.

2- Eliminate any possibility of habit reinforcement or relapse, which can occur if the patient abandons self-monitoring, bringing back the parafunction. Thus, the dentist must emphasize the importance of constancy and discipline throughout the process, which, when correctly done, potentially reverses the problem in a relatively short time. The patient can use cards or small objects as reminders (clues) placed in strategic areas readily visible in daily routines, such as on the phone or work desk.

The therapist or dentist must be assertive, reinforce positive actions, and laud the individual on good conduct and results - ultimately, a patient's achievement. Examples of "Clues" or markers that align with and reinforce habit modification are the moments of cryotherapy or thermotherapy, breathing exercises to regulate the sympathetic autonomic response, relaxation exercises, oral hygiene, etc. The use of mobile apps that regularly warn the patient and record their behavior is an alternative,

composing what is generally called the Ecological Momentary Assessment (EMA), also known as Experience Sampling Method (ESM). It contributes to diagnosis, treatment, and epidemiological research [18,20].

Didactically, the whole process can be represented as the classical system:

1- Unconscious dysfunction > 2- Awareness of the habit 3- > Interruption through routine exercises 4- > Extinguishing the habit.

Conclusion

Sufficient understanding, commitment, or engagement with the cognitive-behavioral strategies for controlling temporomandibular disorders and bruxism is expected due to the patient's awareness and motivation; otherwise, good results are not possible. Establishing an adequate diagnosis and the potential need for referral to supportive psychotherapy is crucial. The last condition is important for addressing deeper, more nuanced emotional questions related to the problem. This treatment must be conducted by a mental health professional.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Manfredini D, Lombardo L, Siciliani G. Temporomandibular disorders and dental occlusion. A systematic review of association studies: End of an era? J Oral Rehabil. 2017; 44: 908-923.

2. Kandasamy S, Greene CS. The evolution of temporomandibular disorders: A shift from experience to evidence. J Oral Pathol Med. 2020 ; 49: 461-469.

3. Lobbezoo F, Ahlberg J, Raphael KG, Wetselaar P, Glaros A, et al. International consensus on the assessment of bruxism: report of a work in progress. J Oral Rehabil. 2018; 45: 837–844.

4. Ohlmann B, Waldecker M, Leckel M, et al. Correlations between Sleep Bruxism and Temporomandibular Disorders. J Clin Med. 2020; 9: 611.

5. Reissmann DR, John MT, Aigner A, Schön G, Sierwald I, et al. Interaction Between Awake and Sleep Bruxism Is Associated with Increased Presence of Painful Temporomandibular Disorder. J Oral Facial Pain Headache. 2017; 31: 299–305.

6. Dworkin SF. The dentist as biobehavioral clinician. J Dent Educ. 2001; 65: 1417-1429.

7. Burns JW, Van Dyke BP, Newman AK, Morais CA, Thorn BE. Cognitive Behavioral Therapy (CBT) and pain education for people with chronic pain: Tests of treatment mechanisms. J Consult Clin Psychol. 2020; 88: 1008-1018.

8. Myers, D. Introdução à Psicologia Geral [Introduction to Psychology]. Rio de Janeiro: LTC S.A., Trad. A.B. Pinheiro de Lemos. 1999; 519p.

9. Davis R, Campbell R, Hildon Z, Hobbs L, Michie S. Theories of behavior and behavior change across the social and behavioral sciences: A scoping review. Health psychology review. 2015; 9: 323-344.

10. Beck AT. Cognitive therapy: Past, present, and future. J Consult Clin Psychol. 1993; 61: 194-198.

11. Hathaway KM. Evaluation and management of maladaptative behaviors and psycological issues in temporomandibular disorders patients. Dental Clinics of North America. 1997; 41: 341-354

12. Dworkin SF. Behavioral dentistry: A renewed paradigm for the future. JIDA. 2000-2001; 79; 4; 11-15.

13. Valiente López M, van Selms MK, van der Zaag J, Hamburger HL, Lobbezoo F. Do sleep hygiene measures and progressive muscle relaxation influence sleep bruxism?. Report of a randomised controlled trial. J Oral Rehabil. 2015; 42: 259-265.

14. Amorim CSM, Espirito Santo AS, Sommer M, Marques AP. Effect of Physical Therapy in Bruxism Treatment: A Systematic Review. J Manipulative Physiol Ther. 2018; 41: 389-404.

15. Bussadori SK, Motta LJ, Horliana ACRT, Santos EM, Martimbianco ALC. The Current Trend in Management of Bruxism and Chronic Pain: An Overview of Systematic Reviews. J Pain Res. 2020; 13: 2413-2421.

16. Carlson CR. Physical self-regulation training for the management of temporomandibular disorders. J Orofac Pain. 2001; 15: 47-55.

17. Soares JMN, Poletto LT de A, Naves MD, Braga LL da C. Efeito da alteração comportamental cognitiva e do alongamento dos músculos elevadores da mandíbula no tratamento das dores orofaciais de origem músculo esquelética [The effect of behavioral cognitive alteration and the stretching of jaw elevation muscles on the treatment of orofacial pains of muscle-skeletal origin]. Arq Odontol. 2016; 43.

18. Manfredini D, Colonna A, Bracci A, Lobbezoo F. Bruxism: A summary of current knowledge on etiology, assessment, and management. Oral Surgery. 2019.

19. Saito-Murakami K, Sato M, Otsuka H, Miura H, Terada N, Fujisawa M. Daytime masticatory muscle electromyography biofeedback regulates the phasic component of sleep bruxism. J Oral Rehabil. 2020; 47: 827-833.

20. Bogart RK, McDaniel RJ, Dunn WJ, Hunter C, Peterson AL, et al. Efficacy of Group Cognitive Behavior Therapy for the Treatment of Masticatory Myofascial Pain. Military Medicine. 2007; 172: 169-174.

21. Orthlieb JD. Oclusão- princípios práticos [Occlusodontie pratique]. Porto Alegre: ARTMED, Trad. Sandra Dias Loguércio. 2002; 228.

22. Azrin NH, Nunn RG. Habit-reversal: A method of eliminating nervous habits and tics. Behav Res Ther. 1973; 11: 619-628.